

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/13/2011 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

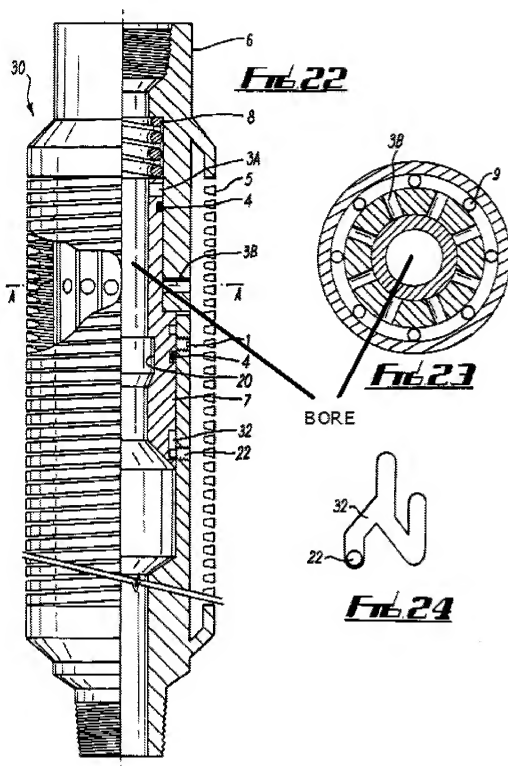
Claims 1, 2, 9-11, 21, 23 and 24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Carmichael et al. (US Patent No. 6,220,357).

In reference to claim 1, Carmichael discloses a plug 30 for controlling fluid flow in a well bore at a packer or other sealing element (col. 6, line 67), the plug 30 comprising a substantially cylindrical body 6 adapted for connection to a threaded wellbore element, the body 6 including a bore (not numbered, see marked up Figs. 22 and 23 below) through a portion thereof thereby creating a barrier and providing isolation from production zones (through port 3B, as shown in Figs. 22 and 28), where in the body 6 comprises a plurality of radial ports 3B for passage of fluid from the bore to an outer

surface 5 of the body 6, an actuating member 7 moveable relative to the body 6 so as to cover each of the plurality of ports 3B in a first position and uncover each of the plurality of radial ports 3B in a second position wherein movement of the actuating member is controlled by an actuating mechanism 32, the mechanism 32 being operable under pressure in the well bore to set the plug in a first natural state (Figs. 19-21) wherein the actuating member 7 is in the first position for a pressure under a predetermined pressure range;

a second closed state (Figs. 28-30) wherein the actuating member 7 is locked in the first position regardless of the pressure being greater or less than the predetermined pressure range or within the predetermined pressure range following an initial increase in pressure greater than the predetermined pressure range or the pressure being within the predetermined pressure range for a period of time less than a predetermined time;

and a third open state (Figs. 25-27) wherein the actuating member 7 is moved to the second position on increasing the pressure to the predetermined pressure range and holding the pressure in the range for a predetermined time.



In reference to claim 2, the actuating mechanism 32 is a channel in actuating member 7, which is a piston.

In reference to claim 9, actuating member 7 is a sleeve.

In reference to claim 10, sleeve 7 is engaged by locking key 22.

In reference to claim 11, the predetermined range to actuate the tool is any pressure above 1500 psi (col. 4, line 55).

In reference to claim 21, Carmichael discloses a method of controlling fluid flow in a well bore through a plug 30 operated by an actuating mechanism 32, the method comprising the steps of:

providing a plug 30 comprising a substantially cylindrical body 6 adapted for connection to any conventional threaded wellbore element, the body 6 including a bore (not numbered, see marked up Figs. 22 and 23 above) through a portion thereof thereby creating a barrier and providing isolation from production zones (by closing off port 3B and isolating a zone outside the screen 5), wherein the body comprises a plurality of radial ports 3B for passage of fluid from the bore to an outer surface 5 of the body 6,

providing an actuating member 7 movable relative to the body 6 so as to cover each of the plurality of radial ports 3B in a first position (Fig. 22) and uncover each of the plurality of ports in a second position (Fig. 25);

providing an actuating mechanism 22 adapted to move the actuating member 7;

increasing pressure from a surface of the well bore to within a predetermined range (high enough to cause shear member 1 to fail); and

holding the pressure within the predetermined range over sufficient time to cause the actuating mechanism 22 to move the actuating member 7 from the first position (Fig. 19) to the second position (Fig. 25) to uncover each of the plurality of radial ports 3B.

In reference to claim 23, a predetermined range of above 1500 psi (col. 4, line 55) is required to actuate the tool.

In reference to claim 24, actuating member 7 is locked in the first position (Fig. 28) after the predetermined pressure actuates the plug 30 to the second position (Fig. 25) and then pressurized again to lock the tool in the locked first position (see Fig. 30 for locking detail).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carmichael et al. (US Patent No. 6,220,357) in view of Henderson (US 6,978,840).

Carmichael discloses all of the limitations of claim 7 with the exception of a pressure sensor located in the bore, a processor to control a motor in response to the pressure, and wherein the motor causes relative movement between the actuating

member and the body. Henderson discloses plug adjacent to packers or other sealing elements 60 comprising a cylindrical body 80 with an actuating member 110 that moves relative to body 80 to cover or uncover ports in body 80. Pressure sensors 150 relay a pressure measurement to a processor 152 which causes an electrical actuating mechanism 125 to move actuating member 110 relative to body 80. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use an electric actuator and a pressure sensor to move an actuating member on the system of Carmichael in view of Henderson so that the apparatus can be actuated by a pressure condition measured in the wellbore rather than a pressure exerted from the surface.

In reference to claims 8 and 27, actuator 8 is a sleeve and it is engaged by key 22 that secures it in either the first or second position.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carmichael et al. (US Patent No. 6,220,357).

Carmichael does not disclose pressure testing above the plug. However, the examiner takes Official Notice that performing a pressure test in a wellbore is well known in the art. It would have been obvious to a person having ordinary skill in the art at the time of the invention to perform a pressure test in the operation of Carmichael so that an operator can ensure all parts of the apparatus are functioning properly.

Allowable Subject Matter

Claims 3-6 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 7/13/2011 have been fully considered but they are not persuasive.

Applicant argues that the rejection should be withdrawn as Carmichael fails to disclose an axial bore within the body. More specifically, Applicant states that the Office Action refers to the bore from claim 1 as the radial ports 3B *and* the radial ports from claim 1 as the radial ports 3B. The last Office Action referred to the bore of Carmichael as the central bore of the body 7, which is not numbered in the figures of Carmichael. The rejection now includes marked up versions of Figs. 22 and 23 which clearly indicate that the bore in question is the central bore of the body 7.

Applicant also argues that the opening and closing of Carmichael differs from that of claim 1. More specifically, Applicant argues that Carmichael fails to disclose moving the actuating mechanism to the third open position by increasing pressure to a predetermined pressure range for a predetermined period of time as described at page 20 lines 17-22 of the specification. Applicant cites that a decrease in pressure is used to move the tool of Carmichael into the configuration shown in Figs. 25-27. This is true, however, immediately before that decrease occurs, an increase in pressure (col. 5, lines 54-57) is used to shear a pin 1 and move the tool into the configuration shown in Figs.

22-24. As the process includes both an increase and a decrease of Carmichael satisfies the limitations of the claim. Additionally, Carmichael doesn't disclose a time range as Applicant asserts. However, the increase in pressure would inherently have to occur over some period of time for the actuating mechanism 7 to shift.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Harcourt whose telephone number is (571)272-7303. The examiner can normally be reached on Monday through Friday from 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shane Bomar can be reached on 571-272-7026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Brad Harcourt/
Primary Examiner, Art Unit 3676

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